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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,262	10/05/2005	Kazuhide Hasebe	33082M275	6774

441 7590 09/26/2007

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EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

MAIL DATE	DELIVERY MODE
09/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,262	HASEBE ET AL.	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10505,83107*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 3, 4, 5, 8-9, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Jeng et al (US 5,282,925)

Jeng discloses a method for etching thin film comprises: forming silicon dioxide film and TEOS on a surface of a workpiece in a processing vessel that can be evacuated to 10^{-3} Torr/ below 7.6 Torr (col 13, lines 45-55; col 19, lines 55-60), using a mixed gas containing HF gas and NH3 gas for etch/remove the silicon dioxide film, the amount of silicon dioxide being etched is controlled by altering the HF/NH3/selectively etching silicon dioxide (col 14, lines 45-55). Jeng also discloses heating the wafer to 100 degree C during etching/processing (col 15, lines 38-40). Regarding claims 3, 5, Jeng discloses processing the wafer having the silicon oxide in the chamber having a pressure of 10-9 Torr (col 13, lines 1-7)

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Cantell et al (US 2002/0063110)

Cantell discloses a method for etching hardmask comprises: forming silicon dioxide film 312 on a surface of a workpiece in a processing vessel that can be evacuated,

using a mixed gas containing HF gas and NH3 gas for etch/remove the silicon dioxide film at a pressure of 3-50 mTorr (page 2, paragraph 0023, 0024-0025; page 3, claim 4)

3. Claims 1-2, 4, 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Natzle et al (US 6,335,261)

Natzle discloses a method for filling feature comprises: forming silicon dioxide film on a surface of a workpiece in a processing vessel that can be evacuated (col 3, lines 53-67), using a mixed gas containing HF gas and NH3 gas (ratio of NH3/HF is 1:2) for selectively etch/remove the silicon dioxide film (col 4, lines 58-65), the workpiece is processed at 100 degree C (col 5, lines 5-10)

4. Claims 1, 7, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chapple-Sokol et al (US 5,268,069)

Chapple-Sokol discloses a method for etching silicon dioxide comprises Natzle discloses a method for filling feature comprises: forming native silicon dioxide film on a surface of a workpiece in a processing vessel that can be evacuated (col 2, lines 15-25), using a mixed gas containing HF gas and NH3 for selectively etch/remove the silicon dioxide film, the workpiece is processed at 200 degree C (col 3, lines 25-35)

5. Claims 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Jeng et al (US 5,282, 925)

Jeng discloses a method for etching thin film in a chamber, the chamber comprises: a substrate mount 21/workpiece holding means for holding wafer/workpiece, heater 17/heating means, valve connected to a vacuum pump/an evacuating means for evacuating the chamber, gas supply system to supply NH3 and HF (col 10, lines 10-45), a supply stem to supply steam (col 11, lines 30-35)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 6, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeng et al (US 5,282,925) in view of Demmin et al (US 6,635,185)

Jeng method has been described above. Unlike the instant claimed inventions as per claims 6, 10, Jeng fails to disclose the claimed flow rate ratio of HF to NH3

Dennis teaches, beginning at col 7, lines 15

> As is well known, there are many operating conditions o a plasma etching process that can have an effect on th results obtained. These conditions include, for example, th type of plasma etching (for example, reactive ion etching plasma etching, and high-density etching), etching compo sition flow rate, wafer temperature, pressure, power, time and bias. The interrelationship of these parameters is function of the hardware configuration and the materia being etched. One skilled in the art of plasma etching an cleaning can vary these parameters accordingly to etch desired material satisfactorily. Exemplary operating condi tions include etching gas flow rates from about 1 to abou 500 standard cubic centimeters per minute (sccm); wafe

One skilled in the art at the time the invention was made would have found it obvious to vary the flow rate of NH3 and HF in Jeng method in view of Dennis because Dennis teaches that changing the parameter such as flow rate according to the material being etched appears to reflect a result-effective variable which can be optimized see MPEP 2144.05 II B

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
September 21, 2007